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Statement of Reed Noss Regarding the Adequacy of Late Seral and Old Growth Definitions in Pacific Lumber's HCP/SYP and the Potential Effects of Implementing The Proposed Late Seral Management Guidelines on Species Associated with Older Forests in the Planning Region

I am Reed F. Noss, a conservation biologist, forest wildlife ecologist, and co-director of the Conservation Biology Institute (800 NW Starker Ave., Suite 31C, Corvallis, OR 97330). I have a M.S. in ecology from the University of Tennessee, a Ph.D. in wildlife ecology from the University of Florida, and 18 years experience in the fields of biology and conservation. I have published more than 140 papers and two books on biological topics and am President-Elect of the Society for Conservation Biology, the largest professional organization in the field. I am currently serving as science team leader for Save-the-Redwoods League in their master planning process. In that capacity I am editing a book on redwood forest ecology and conservation, to be published in 1999 by Island Press. My statements here reflect my own professional opinion as a scientist and do not necessarily represent the views of Save-the-Redwoods League.

My comments address the definitions of late seral and old-growth forest in the PL HCP/SYP, the proposed methods for retaining late seral habitat through silviculture, and the effects of applying these definitions and harvest regimes on biological diversity. Late seral redwood and Douglas-fir forests are known to contain a number of habitat structures, native plants and animals, and ecological processes that are not found in young forests, or are found in reduced abundance there. Hence, conservation of adequate amounts of late seral forest in a configuration that favors retention of these structures, species, and processes is crucial to the long-term persistence of these features on the landscape.

Late Seral and Old-growth Definitions

As noted by Hunter (1989), "there is no generally accepted or universally applicable definition of old growth." Similarly, Tuchmann et al. (1996) stated that "specifying exact age ranges for late-successional and old-growth forests is impossible because of variations in climate, soil quality, disturbances, and numerous other factors." Nevertheless, Hunter (1989) pointed out that the core of a conceptual definition would be "old-growth forests are relatively old and relatively undisturbed by humans." In the Pacific Northwest, the planning team for the President's Forest Plan, as a "general rule," defined late-successional (= late seral) forests as those with trees at least 80 years old and old-growth forests as a "subset of late-successional forests with trees 200 years or older." The planning team was referring largely to Douglas-fir forests. As I will note below, redwood forests at 80 years are generally considered young-growth.

The working definitions of the President's Northwest Forest Plan are generally consistent with others that have been offered for Douglas-fir and other coniferous forests in the Pacific Northwest and coastal California. Franklin (1982) specified age ranges for several seral stages in these forests: herb and shrub: 30 years, young forest: 30-100 years, mature forest: 100-200 years, old growth: 200-800 years, climax forests: >800 years. In the Oregon Coast Range Hansen et al.

(1991) defined age classes as young (40-80 years), mature (80-200 years), and old growth (>200 years). Morrison (1988) recognized three categories of old growth: (1) "classic" old growth–stands meeting all minimum old-growth criteria in which at least 8 trees per acre exceed 300 years in age or 40 inches in diameter. Included in this grouping are stands that may be considered super old growth, with trees exceeding 700 years in age or 72 inches in diameter. (2) "early" old growth–stands meeting all minimum old-growth criteria in which at least 8 trees per acre exceed 200 years in age or 32 inches in diameter. These stands may include some older trees but in insufficient numbers to qualify as classic old growth. (3) "Mature"–stands where more than 20 trees per acre exceed 80 years in age or 21 inches in diameter. Included in this category are stands which fail to meet one or more of the minimum old-growth criteria.

Morrison (1988) also noted that "old-growth stands less than 80 acres in size are not viewed as viable old-growth units because external influences can easily penetrate and because they are vulnerable to disturbances such as windthrow." Most forest ecologists agree that small patches, especially when isolated, cannot be considered viable forest ecosystems.

Importantly, most definitions of old growth consider more than simply tree age. Among the frequently noted characteristics are deep, multi-layered canopies, abundant shade-tolerant species, numerous large, standing snags and downed logs in various size and decay classes, and abundant tree cavities (Franklin et al. 1981, Franklin 1982, Old-growth Definition Task Group 1986, Morrison 1988, Norse 1990). As I will note below, these structural characteristics are important in determining the biological diversity of redwood forests, as in other forest types. Variation in site class (i.e., suitability of conditions for tree growth) has an influence on the age at which a stand develops old-growth structural characteristics. For Douglas-fir/tanoak forests in California, Beardsley and Warbington (1996) considered old-growth conditions to begin at 180 years on high site classes, 240 years on medium site classes, and 300 years on low site classes.

Specific to redwood, the tree species of most concern in the PL HCP/SYP, Helms (1994) notes that "most existing stands on alluvial flats are about 800 years old, although redwood may grow vigorously for 2000 years." Bingham and Sawyer (1991) characterized redwood stands in the Angelo Reserve (central redwood forests section) as young at 40-100 years, mature at 100-200 years, and old-growth at 200-560 years. Helms (1994) agreed that 100-year old stands of redwood are young-growth: "young growth stands at 100 years have yields ranging from 10,600 cubic feet per acre on low-index sites to 51,080 cubic feet per acre on high-index sites." Although redwood is a relatively fast-growing tree, its long life span and potentially huge final size suggest that true late seral and, especially, old-growth conditions are slow to develop. Old-growth redwood stands are composed of very large, tall trees. The tallest known living redwood is 112.0 meters in height; the tallest historically reported redwood was 115.8 m tall. There are 16 living redwood trees known to be over 110 m tall. Old-growth redwoods have immense diameters; for example, the Fieldbrook Stump in Humboldt County is 9.8 m in diameter at a point 1.5 meters from the ground. Another tree, cut in 1926, was only 6.6 m diameter at the base, but had such a slight taper that by 60 m off the ground it was still 4.6 m in diameter (Sawyer et al. 1999a).

Considering these well-accepted definitions and characterizations of late seral and old-growth forests, the definitions given in the PL HCP/SYP appear to be far outside the range of scientific opinion. The PL HCP/SYP (Vol. I, pages 15-16) defines late seral forest as "made up of stands with overstory trees that on average are larger than generally 24" dbh and may have developed a multi-storied structure. It occurs in stands as young as 40 years old but more typically in stands about 50 to 60 years old and older." By most definitions of age classes for both Douglas-fir and redwood, forests below 100 years in age would be considered young forest. RN-1

The PL HCP/SYP (Vol I, pages 15-16) correctly considers old growth "a late seral type" and in its plan includes only unentered stands in the old-growth category. Nevertheless, old growth is further defined by PL as stands with "multiple canopy layers dominated by trees over 30 inches dbh." Given the tremendous potential diameter of redwood–as well as Douglas-fir–this dbh threshold seems extremely low.

<u>Potential Effects of PL's Definitions and Late-Seral Harvest Plans on Biological Diversity</u>

PL's plans for "late seral selection" (Vol III, Part B, page 10) have, as a goal, the creation and maintenance of "multi-storied, uneven-aged, late-seral forest habitat." They plan to use selection harvesting to "enhance the growth of a few large trees while creating and maintaining special habitat elements including decadent trees, snags, downed logs, and other woody material." Given PL's definition of late-seral forest, however, there is no assurance that true late-seral forests will be created or maintained. Indeed, the table of desired residual basal area by diameter class shows that only 52% of the trees left on site after harvest will exceed 30 inches in diameter and no (0%) trees larger than 48 inches dbh will be retained. This silvicultural system will not maintain true late-seral redwood or Douglas-fir forest, much less old growth. RN-2

What are the potential consequences of losing large, old trees from PL's lands? One must begin by recognizing the larger context of the redwood ecosystem. Approximately 96% of the original, old-growth redwood forest has already been destroyed by logging (U.S. Fish and Wildlife 1997). Much of the remaining forest is highly fragmented, i.e., small, remnant stands isolated from other old-growth stands across a second-growth or third-growth landscape. This landscape matrix serves as habitat for early successional and generalist species, but generally not for old-growth species (Diaz and Bell 1997). Some of the second growth is beginning to achieve old-growth characteristics or retain these characteristics as residual features of the former, old-growth stands. In some cases second-growth redwood stands that retain residual old-growth components are suitable habitat for typically late-seral species such as the northern spotted owl, red tree vole, flying squirrel, and fisher (Noon and Murphy 1997, Thornburgh et al. 1999). Nevertheless, species adapted to the unique environment of old-growth forests, such as canopy alectorioid lichens and other nonvascular epiphytes, as well as many invertebrates, cannot persist in young forest patches (Thornburgh et al. 1999).

Species that rely on snags and coarse woody debris, such as many salamanders, also do not occur or persist in young forests, unless considerable woody debris remains from the old growth that formerly occupied the site. The California slender salamander, for example, is significantly more abundant in mature and old-growth redwood forest compared to young forest (Welsh, in Cooperrider et al. 1999). Furthermore, an amazing 320 species of fungi have been found in redwood forests. Most of these species depend on coarse woody debris–i.e., large, downed logs that retain moisture in the dry season. These structures are supplied in abundance and perpetuity only in true late seral forests. Thinning can increase the rate of recovery of old-growth forest conditions in young stands (Menges 1994, cited in Thornburgh et al. 1999), but it is too early to say how long it takes to reestablish a complete old-growth community.

One of the species most dependent on old-growth redwoods, which is unlikely to fare well under the silvicultural systems proposed in the PL HCP/SYP, is the marbled murrelet. Experts on this species will have more to say about it than I can, but it is clear that the species is dependent on old growth. Murrelet nests in California are found exclusively on old-growth trees, above 30 m in height on large limbs with high vertical cover (K. Nelson, in Cooperrider et al. 1999). Murrelets have declined by some 90% since European settlement and continue to decline at a rate of about 4-7% annually (Beissinger 1995, Ralph and Miller 1995). The PL plan, because it fails to regenerate true old-growth forests, will likely contribute to this decline. RN-3

Another striking feature of old-growth redwood forests that will not be maintained or created through PL's late-seral selection system is the remarkably complex forest canopy. Large redwood trees (i.e., generally much larger than the trees that will be retained under PL's system) develop a complex canopy structure. Main trunks often snap and resprout; even branches can sprout new erect stems that are essentially new trunks, each of which develops a complex crown. Highly reiterated crowns resemble forest stands more than individual trees (Sillett, in Sawyer et al. 1999b). A considerable amount of debris collects in these crowns, forming canopy soil. These canopy ecosystems support diverse assemblages of vascular and nonvascular plants, insects, earthworms, mollusks, and amphibians (Sillett, in Sawyer et al. 1999a). The clouded salamander, for example, has been found to nest 40 m high in the canopy soil of old-growth redwoods (Welsh, in Cooperrider et al. 1999). The redwood canopy communities are only beginning to be studied. It is not unlikely that species new to science will be discovered in these and other habitats of late-seral forests. These communities will essentially disappear under PL's silvicultural systems. RN-4

An important consideration for the maintenance of redwood forests is the role of fog. During the summer, when rainfall in the redwood region is extremely low, fog serves as an additional water source. Studies have confirmed that fog can reduce water stress, enhance growth, and perhaps influence the long-term survival of redwoods (Dawson 1996, 1998, Dawson, in Sawyer et al. 1999). Because of the increased surface area of complex canopies, fog is probably "stripped" from the atmosphere and added to the system (through needle drip, increasing soil moisture) more effectively in large patches of old-growth trees with complex canopies, compared to the young forest that would be maintained under PL's plan. RN-5

Finally, type conversions, which can take place rapidly through clearcutting and planting or slowly through the effects of selection logging, are of great concern to ecologists and conservationists because of their often profound effects on the biological diversity of forests locally and regionally. The PL HCP/SYP will result in a declining ratio of redwood to Douglas-fir over time. Veirs and Lennox (1981; cited in Sawyer et al. 1999a) noted that the density ratio of canopy redwood to canopy Douglas-fir in current old growth ranges from 10:1 to 3:1. They also noted that the situation is reversed in current second-growth forests of Redwood National Park, an artifact of aerially seeding Douglas-fir. A linear regression analysis suggested that, left alone, these stands would reach a 1:1 ratio at 100 years of age and a 2:1 ratio of redwood to Douglas-fir after 250-300 years. Thinning of Douglas-fir produced stands at 60 years that had ratios similar to those of old growth.

In contrast, the PL plan would result in a pronounced shift from redwood to Douglas-fir over the life of the plan (12 decades). Whereas redwood accounts for 65% of the harvest in the first decade, it will account for only 26% of the harvest by decade 12. Douglas-fir will increase from 25% to 72% of the harvest over the same period. This type conversion will not bode well for species dependent on old-growth redwoods in the plan area. For example, marbled murrelets in California are known to occur primarily in the coast redwoods; only a few observations–and no nests–have been recorded in Douglas-fir dominated forests (however, nests may occur in Douglas-fir trees in redwood-dominated forests) (Nelson, in Cooperrider et al. 1999). RN-6

In summary, the PL HCP/SYP will fail to maintain true late-seral and old-growth forest in the planning area, disguises this failure by defining "late seral" to include what almost all ecologists would consider young forest, and will lead to a general type conversion of redwood to Douglas-fir. Thus, the plan has a high probability of contributing to a loss of the species and ecological functions associated with true late-seral redwood forest in the region. RN-7

<u>Literature Cited</u>

Beardsley, D., and R. Warbington. 1996. Old Growth in Northwestern California National Forests. PNW-RP-491. USDA Forest Service, Portland, OR.

Beissinger, S. R. 1995. Population trends of the marbled murrelet projected from demographic analyses. Pages 385-393 in C. J. Ralph, G. L. Hunt, Jr., J. F. Piatt, and M. G. Raphael, editors. Ecology and Conservation of the Marbled Murrelet. USDA Forest Service General Technical Report PSW-GTR-152, Albany, CA.

Bingham, B.B.,and J.O. Sawyer. 1991. Distinctive features and definitions of young, mature, and old-growth Douglas-fir/hardwood forests. Pages 363-377 *in* L. F. Fuggiero, K. B. Aubry, A. B. Carey, M. H. Huff,editors. Wildlife and vegetation in unmanaged Douglas-fir forests. USDA Forest Service, Pacific Northwest Research Station General Technical Report PNW-GRT-285. Portland, OR.

Cooperrider, A.Y., C. Carroll, K. Nelson, R. Noss, D. Olson, H. Welsh, and W. Zielinski. 1999. Terrestrial fauna of redwood forests. In R.F. Noss, editor. The Redwood Forest: History, Ecology, and Conservation of Coast Redwoods. Island Press, Washington, DC.

Dawson, T.E. 1996. The use of fog precipitation by plants in coastal redwood forests. Pages 90-93 *in* J. LeBlanc editor. Proceedings of a conference on coastal redwood ecology and management. University of California Cooperative Extension Forestry Publication. Humboldt State University, Arcata, CA.

Dawson, T.E. 1998. Fog: ecosystem inputs and use by plants. Oecologia (in press).

Diaz, N.M., and S. Bell. 1997. Landscape analysis and design. Pages 255-269 in K.A. Kohm and J.F. Franklin, editors. Creating a Forestry for the 21st Century. Island Press, Washington, DC.

Franklin, J.F. 1982. Old-growth forests in the Pacific Northwest: an ecological view. In Old Growth: A Balanced Perspective. Bureau of Government Research and Service, Washington, DC.

Franklin, J.F., K. Cromack, W. Denison, A. McKee, C. Maser, J. Sedell, F. Swanson, and G. Juday. 1981. Ecological Characteristics of Old-growth Douglas-fir Forests. Gen. Tech. Rep. PNW-118. USDA Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR.

Hansen, A.J., T.A. Spies, F.J. Swanson, and J.L. Ohmann. 1991. Conserving biodiversity in managed forests: lessons from natural forests. BioScience 41:382-392.

Helms, J.A. 1994. The California region. Pages 441-498 in J.W. Barrett, editor. Regional Silviculture of the United States. John Wiley and Sons, New York.

Hunter, M.L., Jr. 1989. What constitutes an old-growth stand? Journal of Forestry 87(8):33-35.

Menges, K.M. 1994. Bird abundance in old-growth, thinned, and unthinned redwood forests. Unpublished report. Department of Forestry, Humboldt State University, Arcata, CA.

Morrison, P.H. 1988. Old growth in the Pacific Northwest: A Status Report. The Wilderness Society, Seattle, WA.

Noon, B.R., and D.D. Murphy. 1997. Management of the spotted owl: the interaction of science, policy, politics, and litigation. Pages 432-441 in G.K. Meffe and C.R. Carroll, editors. Principles of Conservation Biology. Second edition. Sinauer, Sunderland, MA.

Norse, E.A. 1990. Ancient Forests of the Pacific Northwest. The Wilderness Society and Island Press, Washington, DC.

Old-growth Definition Task Group. 1986. Interim Definitions for Old-growth Douglas-fir and Mixed Conifer Forests in the Pacific Northwest and California. PNW-447. USDA Forest Service, Portland, OR.

Ralph, C. J. and S. L. Miller. 1995. Offshore population estimates of Marbled Murrelets in California. Pages 353-360 in C. J. Ralph, G. L. Hunt, Jr., J. F. Piatt, and M. G. Raphael, editors. Ecology and Conservation of the Marbled Murrelet. USDA Forest Service General Technical Report PSW-GTR-152, Albany, CA.

Sawyer, J.O., S. C. Sillett, J.H. Popenoe, A. LaBanca, R. Van Pelt, T. Sholars, and D.L. Largent. 1999a. Redwood vegetation and flora. In R.F. Noss, editor. The Redwood Forest: History, Ecology, and Conservation of Coast Redwoods. Island Press, Washington, DC.

Sawyer, J.O., S. C. Sillett, W.J. Libby, T.E. Dawson, J.H. Popenoe, D.L. Largent, R. Van Pelt, S.D. Veirs, Jr., D.A. Thornburgh, and R.F. Noss. 1999b. Redwood trees, communities, and ecosystems: a closer look. In R.F. Noss, editor. The Redwood Forest: History, Ecology, and Conservation of Coast Redwoods. Island Press, Washington, DC.

Thornburgh, D., F. Euphrat, D. Angelides, C. Olson, A. Cooperrider, R.F. Noss, and T. Roelofs. 1999. Managing redwoods. In R.F. Noss, editor. The Redwood Forest: History, Ecology, and Conservation of Coast Redwoods. Island Press, Washington, DC.

Tuchmann, E., K.P. Connaughton, L.E. Freedman, and C.B. Moriwaki. 1996. The Northwest Forest Plan: A Report to the President and Congress. USDA Office of Forestry and Economic Assistance, Washington, DC.

U.S. Fish and Wildlife Service. 1997. Recovery plan for the marbled murrelet (*Brachyramphus marmoratus*) in Washington, Oregon and California. U.S. Fish and Wildlife Service, Portland, OR.

Veirs and Lennox 1981. Reference not available (sited in Sawyer et al. 1999a).

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Summary

Primary interests and talents are in conservation biology, biogeography, landscape ecology, land-use planning, nature reserve design, ecosystem management, field ornithology, forest and rangeland wildlife relationships, biological inventory and monitoring, natural history, teaching, and writing.

Education includes a B.S. in Biology and Health Education, graduate work in Environmental Education, a M.S. in Ecology (University of Tennessee), and a Ph.D. in Wildlife Ecology (University of Florida).

Employment experience includes field biological research, animal and plant population surveys, conservation and land-use planning, environmental assessment and review, land management, natural history interpretation, supervision, administration, writing, editing, and teaching.

Personal

Born June 23, 1952, Dayton, Ohio (citizen of U.S.A.)
Married, three children
Excellent physical condition

Employment

August 1997-present. **Co-Executive Director, The Conservation Biology Institute**. Corvallis, Oregon

August 1990-present. **International Consultant and Lecturer in Conservation Biology.** Corvallis, Oregon

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1988-1990. **Biodiversity Project Leader,** U.S. Environmental Protection Agency, Environmental Research Lab, Corvallis, Oregon

1984-1988. **President and Ecologist,** Landscape Ecosystems (consulting firm), Gainesville, Florida

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1988. **Adjunct Faculty**, Santa Fe Community College, Gainesville, Florida (Biology Instructor)

1987. **Associate Faculty**, School for Field Studies, Beverly, Massachusetts (taught field ecology course in San Juan Mountains of Colorado)

1984-1987. **Graduate Research Assistant**, University of Florida, Gainesville, FL

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1981-1983. **Ecologist**, Ohio Natural Heritage Program, Ohio Dept. of Natural Resources, Division of Natural Areas & Preserves, Columbus, Ohio

1980-1981. **Naturalist**, Ohio Dept. of Natural Resources, Div. of Parks & Recreation

1979. **Field Biologist**, two contracts: (1) survey of herpetofauna in proposed state natural areas for

Tennessee Natural Heritage Program; (2) survey of gray bat maternity colonies in Kentucky for U.S. Fish & Wildlife Service

1977-1979. **Graduate Teaching Assistant**, University of Tennessee (Knoxville); taught General Biology and General Ecology

1978. **Ecological Consultant in Nicaragua**. Land-use and national park planning

1972-1977. **Environmental Education**, several jobs: (1) Science Director for youth camp in Ontario (3 summers); (2) Teacher-naturalist at Glen Helen Outdoor Education Center, Antioch College (1 year); (3) Naturalist for youth camp in Ohio (1 summer); (4) Naturalist for Ohio Historical Society at Cedar Bog State Preserve (2.5 years, part-time)

Education

1988. Ph.D. Department of Wildlife & Range Sciences, School of Forest Resources & Conservation, University of Florida. Cumulative GPA = 4.00

1979. M.S. Graduate Program in Ecology, University of Tennessee, Knoxville. Cumulative GPA = 3.96
1975-1976. Graduate School of Education, Antioch College, Yellow Springs, Ohio. 15 graduate hours in outdoor education

1975. B.S. School of Education, University of Dayton, Ohio. Final GPA = 3.78

Honors and Awards

1984-1987. Graduate Research Award, School of Forest Resources and Conservation, University of Florida

1985. Annual Research Award, Florida Ornithological Society

1986. Annual Research Award, Alachua Audubon Society

1986. Annual Research Award, Frank M. Chapman Memorial Fund, American Museum of Natural History

1986. Annual Research Award, Josselyn Van Tyne Memorial Fund; American Ornithologists' Union

1987. President's Recognition Award, University of Florida

1988. Environmental Publication Award, National Wildlife Federation

1993-1996. Pew Scholars Award in Conservation and the Environment

1995. Conservation Community Award for Outstanding Achievement in the Field of Publications, Natural Resources Council of America (for book, *Saving Nature's Legacy*)

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Avocations

Karate (5th degree black belt and master instructor, Hayashi-ha Shito-ryu Kai), kobudo (ancient Okinawan weaponry, Kenshin-ryu), tai chi chu'an (Yang style), hatha yoga, birding, natural history, hiking and backpacking, nature photography, music, bicycling, running, canoeing, beer brewing

Professional Society Memberships

Society for Conservation Biology
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Ecological Society of America
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Recent Professional Appointments

1997-1999. President-Elect, Society for Conservation Biology (to be followed by a two-year presidency, 1999-2001)

1997-present. Member, Science Committee, The Wildlands Project

1992-present. Member, Board of Governors, Society for Conservation Biology

1992-present. Member, Board of Directors, The Cenozoic Society

1993-1996. Member, Board of Directors, Natural Areas Association

1991-1996. Member, Board of Directors, The Wildlands Project

1997-present. Member, Advisory Board, Korea Peace Bioreserves Project

1996-present. Science Advisor, World Resources Institute

1992-present. Member, Advisory Board, The Ecoforestry Institute

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1993-present. Member, Advisory Board, Oregon Natural Desert Association

1994-present. Member, Science Advisory Board, Defenders of Wildlife

1993. Member, Old-growth Ecosystem Panel for Northwest Forest Ecosystem Team advising President Clinton on management options

1993-1996. Member, Committee on the Scientific Basis for Ecosystem Management, Ecological Society of America

1994-present. Member, Ad Hoc Committee to Revise Criteria for Selection of Biosphere Reserves, USMAB, U.S. Department of State

1989-1991. Participant, Keystone Center National Policy Dialogue on Biological Diversity

1990-present. Member, State of Oregon Habitat Conservation Trust Fund Board (appointed by the President of the Oregon Senate)

1990-1991. Member, World Wildlife Fund Advisory Committee on Habitat Conservation Plans

1989-present. Member, Advisory Board, Northwest Ecosystem Alliance

1991-1994. Member, Southern California Coastal Sage Scrub Scientific Review Panel (appointed by Governor of California)

1991-present. Member, Board of Editors, Conservation Biology

1988-1993. Subject Matter Editor for Landscape Ecology, Board of Editors, The Natural Areas Journal

1991-present. Science Editor, Wild Earth

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PUBLICATIONS

Publication Summary

Refereed Journal Articles: 28	Other Articles: 42
Book Chapters: 36	Technical Reports: 20
Books: 3	Symposium Proceedings: 11
Papers in Review: 2	**Total**: 142

Noss, R.F. 1980. Caving for gray bats in Kentucky. The Explorer 22(4): 22-27.

Noss, R.F. 1981. Birds of Ohio: a Field Checklist. Ohio Department of Natural Resources. 12 pp.

Noss, R.F. 1981. The birds of Sugarcreek, an Ohio nature reserve. Ohio Journal of Science 81: 29-40.

Noss, R.F. 1982. Conservation in and out of nature preserves. Ohio Journal of Science 82: 101 (abstract).

Noss, R.F. 1983. Birds as preserve management indicators: regional perspective urged. Restoration and Management Notes 1(3): 29.

Noss, R.F., and S. McKee. 1983. The breeding birds of Mohican. The Ohio Cardinal 4(2): 37-40.

Noss, R.F. 1983. Re-creating an Ohio Valley wilderness. Midwest Earth Advocate 1(1): 4.

Noss, R.F. 1983. Different levels of natural areas thinking. The Natural Areas Journal 3(3) : 8-14.

Noss, R.F. 1983. A regional landscape approach to maintain diversity. BioScience 33: 700-706.

Noss, R.F. 1984. About not knowing everything (Guest Editorial). Restoration and Management Notes 2(1): 3.

Noss, R.F. 1985. Rescue or abuse? The Palmetto 4(4): 12.

Noss, R.F., H.W. Kale, and C.W. Biggs. 1985. Florida Breeding Bird Atlas: Handbook for Cooperators. Florida Audubon Society, Maitland, Florida. 28 pp.

Noss, R.F. 1985. Landscape Considerations in Reintroducing and Maintaining the Florida Panther: Design of Appropriate Preserve Networks. Report to the Florida Panther Technical Advisory Council. 32 pp. + figures.

Cristoffer, C., R.F. Noss, and J.F. Eisenberg. 1985. Report No. 3. On the captive breeding and reintroduction of the Florida panther into suitable habitats. Report to Florida Game & Fresh Water Fish Commission, Tallahassee, FL.

Noss, R.F. 1985. On characterizing presettlement vegetation: how and why. The Natural Areas Journal 5(1): 5-19.

Noss, R.F. 1986. Conservation Guidelines: Florida Native Plant Society. The Palmetto 6(2): 12-13.

Noss, R.F. 1986. Dangerous simplifications in conservation biology. Bulletin of the Ecological Society of America 67:278-279.

Noss, R.F., and L.D. Harris. 1986. Nodes, networks, and MUM's: preserving diversity at all scales. Environmental Management 10: 299-309.

Noss, R.F. 1987. From plant communities to landscapes in conservation inventories: a look at The Nature Conservancy (USA). Biological Conservation 41: 11-37.

Noss, R.F. 1987. Corridors in real landscapes: a reply to Simberloff and Cox. Conservation Biology 1: 159-164.

Harris, L.D., and R.F. Noss. 1987. Endangerment with the best of intentions. Pages 31-38 in R. Fitter and M. Fitter, eds. Proceedings of a Symposium held by the Species Survival Commission, Madrid, 7-9 Nov., 1984. International Union for Conservation of Nature and Natural Resources, Gland, Switz.

Noss, R.F. 1987. Do we really want diversity? Whole Earth Review 55: 126-128

Noss, R.F. 1987. Saving species by saving ecosystems: A review of The Preservation of Species: The Value of Biological Diversity, ed. by Brian G. Norton. Conservation Biology 1: 175-177.

Brown, M.T., J.M. Schaefer, K.H. Brandt, S.J. Doherty, C.D. Dove, J.P. Dudley, D.A. Eifler, L.D. Harris, R.F. Noss, and R.W. Wolfe. 1987. An Evaluation of the Applicability of Upland Buffers for the Wetlands of the Wekiva Basin. Center for Wetlands, University of Florida. 163 p.

Duever, L.C., R.W. Simons, R.F. Noss, and J.R. Newman. 1987. Final Report: Comprehensive Inventory of Natural Ecological Communities in Alachua County. KBN Engineering and Applied Sciences. Gainesville, Florida.

Noss, R.F. 1987. Florida's National Forests: Our last chance. ENFO 87(6): 1-14.

Noss, R.F. 1987. Protecting natural areas in fragmented landscapes. The Natural Areas Journal 7 (1): 2-13.

Noss, R.F. 1988. The longleaf pine landscape of the Southeast: almost gone and almost forgotten. Endangered Species Update 5 (5): 1-8.

Noss, R.F., and R.F. Labisky. 1988. Sensitivity of Vertebrates to Development in Four Upland Community Types in Northern Peninsular Florida. Florida Game and Fresh Water Fish Commission, Tallahassee, FL.

Noss, R.F. 1989. Who will speak for biodiversity? Conservation Biology 3: 102-103.

Noss, R.F., and S. Henderson. 1989. Biodiversity: A new focus for environmental protection. Habitat Futures, Summer 1989: 13-14.

Henderson, S., R.K. Olson, and R.F. Noss. 1989. Current and potential threats to biodiversity in forests of the Lower Pacific Coastal States. Pages 325-336 in R.K. Olson and A.S. Lefohn, eds. Effects of Air Pollution on Western Forests. Air and Waste Management Association, Pittsburgh, PA.

Noss, R.F. 1989. A history of predator control. Review of Saving America's Wildlife, by T.R. Dunlap. Trends in Ecology and Evolution 4: 358.

Noss, R.F. 1989. Longleaf pine and wiregrass: Keystone components of an endangered ecosystem. The Natural Areas Journal 9: 211-213.

Duever, L.C., and R.F. Noss. 1990. A computerized method of priority ranking for natural areas. Pages 22-33 in R.S. Mitchell, C.J. Sheviak, and D.J. Leopold, eds. Ecosystem Management: Rare Species and Significant Habitats. Bulletin No. 471, New York State Museum, Albany, NY.

Noss, R.F. 1990. Can we maintain biological and ecological integrity? Conservation Biology 4: 241-243.

Noss, R.F., and L.D. Harris. 1990. Connectivity and conservation of biological diversity: Florida as a case history. Pages 131-135 in Proceedings of the 1989 Society of American Foresters National Convention, Spokane, WA, September 24-27. Society of American Foresters, Bethesda, MD.

Noss, R.F. 1990. Indicators for monitoring biodiversity: A hierarchical approach. Conservation Biology 4: 355-364.

Duever, L.C., and R.F. Noss, eds. 1990. Wiregrass Biology and Management: Maintaining Groundcover Integrity in Longleaf Pine Ecosystems. Proceedings of the Symposium, Oct. 13, 1988, Valdosta State College, GA. KBN Engineering and Applied Sciences, Inc. Gainesville, FL.

Scott, J.M., F. Davis, B. Csuti, B. Butterfield, R. Noss, S. Caicco, H. Anderson, J. Ulliman, F. D'Erchia, and C. Groves. 1990. Gap Analysis: Protecting Biodiversity Using Geographic Information Systems. U.S. Fish and Wildlife Service, Idaho Cooperative Fish and Wildlife Research Unit, University of Idaho, Moscow, ID.

Noss, R.F. 1990. What can wilderness do for biodiversity? Pages 49-61 in P. Reed, ed. Preparing to Manage Wilderness in the 21st Century. Proceedings of the Conference, April 4-6, 1990, Athens, GA. USDA Forest Service, Southeastern Forest Experiment Station, Asheville, NC.

Noss, R.F., and M.J. Bland. 1990. Geology and physiography. Pages 4-26 in S.H. Wolfe, ed. An Ecological Characterization of the Florida Springs Coast: Pithlachascotee to Waccasassa Rivers. Biological Report 90(21). USDI Fish and Wildlife Service, Washington, DC.

Noss, R.F., and S.H. Wolfe. 1990. Summary. Pages 211-219 in S.H. Wolfe, ed. An Ecological Characterization of the Florida Springs Coast: Pithlachascotee to Waccasassa Rivers. Biological Report 90(21). USDI Fish and Wildlife Service, Washington, DC.

Noss, R.F. 1991. Effects of edge and internal patchiness on avian habitat use in an old-growth Florida hammock. Natural Areas Journal 11: 34-47.

Hirth, D.H., L.D. Harris, and R.F. Noss. 1991. Avian community dynamics in a peninsular Florida longleaf pine forest. Florida Field Naturalist 19(2): 33-48.

Noss, R.F. 1991. From endangered species to biodiversity. Pages 227-246 in K. Kohm, editor. Balancing on the Brink of Extinction: The Endangered Species Act and Lessons for the Future. Island Press, Washington, DC.

Noss, R.F. 1991. Sustainability and wilderness. Conservation Biology 5: 120-122.

Noss, R.F. 1991. Wilderness recovery: Thinking big in restoration ecology. The Environmental Professional 13: 225-234.

Noss, R.F. 1991. Landscape connectivity: Different functions at different scales. Pages 27-39 in W.E. Hudson, ed. Landscape Linkages and Biodiversity. Island Press, Washington, DC.

Noss, R.F. 1991. Federal Land Management Alternatives for Westside Forests: Effects on Wildlife and Biological Diversity. The Wilderness Society, Washington, DC.

Noss, R.F. 1991. Protecting Habitats and Biological Diversity: Design of Regional Reserve Systems. National Audubon Society, New York.

Noss, R.F. 1991. Review of Wildlife, Forests, and Forestry: Principles of Managing Forests for Biological Diversity, by Malcolm L. Hunter, Jr. Forest Perspectives 1(1): 18.

Noss, R.F. 1991. A Critical Review of the U.S. Fish and Wildlife Service's Proposal to Establish a Captive Breeding Population of Florida Panthers, with Emphasis on the Population Reestablishment

Issue. Fund for Animals, Washington, DC.

Noss, R.F. 1991. Policy directions and management options for high-intensity fire habitats: Comments in panel discussion. Pages 393-394 in High Intensity Fire in Wildlands: Management Challenges and Options. Proceedings of the 17th Tall Timbers Fire Ecology Conference, May 18-21, Tallahassee, Florida. Tall Timbers Research Station, Tallahassee, FL.

Barker, J.R., S.H. Henderson, R.F. Noss. and and D.T. Tingey. 1991. Biodiversity and human impacts. Pages 353-362 in Encyclopedia of Earth System Science, Vol. 1. Academic Press, San Diego, CA.

Noss, R.F. 1991/92. Biologists, biophiles, and warriors. Wild Earth 1(4): 56-60.

Noss, R.F. 1992. Issues of scale in conservation biology. Pages 239-250 in P.L. Fiedler and S.K. Jain, eds. Conservation Biology: The Theory and Practice of Nature Conservation, Preservation, and Management. Chapman and Hall, New York.

Brussard, P.F., D.D. Murphy, and R.F. Noss. 1992. Strategy and tactics for conserving biological diversity in the United States. Conservation Biology 6: 157-159.

Noss, R.F. 1992. Biodiversity in the Blue Mountains: A framework for monitoring and assessment. Proceedings, Blue Mountains Biodiversity Conference, Whitman College, Walla Walla, WA, May 26-29, 1992.

Hughes, R.M., and R.F. Noss. 1992. Biological diversity and biological integrity: Current concerns in lakes and streams. Fisheries 17(3): 11-19.

O'Connell, M.A., and R.F. Noss. 1992. Private land management for biodiversity conservation. Environmental Management 16: 135-151.

Frissell, C.A., R.K. Nawa, and R. Noss. 1992. Is there any conservation biology in "New Perspectives?": A reply to Salwasser. Conservation Biology 6: 461-464.

Noss, R.F., S.P. Cline, B. Csuti, and J.M. Scott. 1992. Monitoring and assessing biodiversity. Pages 67-85 in E. Lykke, ed. Achieving Environmental Goals: The Concept and Practice of Environmental Performance Review. Belhaven Press, London, England.

Noss, R.F. 1992. Connectivity as a principle for regional conservation planning. Proceedings of the Workshop: Linkages, Corridors, and Connectivity. March 17-19, 1992. University of Florida, Gainesville, FL.

Noss, R.F. 1992. Interpreting biodiversity. Pages 11-37 in W.E. Hudson, ed. Nature Watch: A

Resource for Enhancing Wildlife Viewing Areas. Defenders of Wildlife and Falcon Press, Helena, MT.

Noss, R.F. 1992. A Preliminary Biodiversity Conservation Plan for the Oregon Coast Range. Coast Range Association, Newport, OR.

Noss, R.F. 1992. The Wildlands Project: Land conservation strategy. Wild Earth (Special Issue): 10-25.

Noss, R.F. 1992. Biodiversity: Many scales and many concerns. Pages 17-22 in H. Kerner, ed. Proceedings of the Symposium on Biodiversity of Northwestern California. Wildlands Resources Center, University of California, Berkeley, CA.

Noss, R.F. 1993. Review of Nature Conservation 2: The Role of Corridors, by D.A. Saunders and R.J. Hobbs. Journal of Wildlife Management 57: 191-192.

Noss, R.F. 1993. Wildlife corridors. Pages 43-68 in D.S. Smith and P.C. Hellmund, eds. Ecology of Greenways. University of Minnesota Press, Minneapolis, MN.

Henderson, S., R.F. Noss, and P. Ross. 1993. Can NEPA protect biodiversity? Pages 463-472 in S.G. Hildebrand and J.B. Cannon, eds. Environmental Analysis: The NEPA Experience. Lewis, Boca Raton, FL.

Scott, J.M., F. Davis, B. Csuti, R. Noss, B. Butterfield, C. Groves, H. Anderson, S. Caicco, F. D'Erchia, T.C. Edwards, J. Ulliman, and R.G. Wright. 1993. Gap Analysis: A geographic approach to protection of biological diversity. Wildlife Monographs 123: 1-41.

Noss, R.F. 1993. Whither conservation biology? Conservation Biology 7: 215-217.

Grumbine, R.E., M. Friedman, and R.F. Noss. 1993. Conserving biodiversity in the Greater North Cascades Ecosystem. Pages 136-155 in M. Friedman and P. Lindholdt, eds. Cascadia Wild. Greater Ecosystem Alliance and Frontier Publishing, Seaside, OR.

Noss, R.F. 1993. A conservation plan for the Oregon Coast Range: Some preliminary suggestions. Natural Areas Journal 13: 276-290.

Kremen, C., R. Colwell, T.L. Erwin, D.D. Murphy, R.F. Noss, and M.A. Sanjayan. 1993. Arthropod assemblages: Their use as indicators in conservation planning. Conservation Biology 7: 796-808.

Noss, R.F. 1993. A sustainable forest is a diverse and natural forest. Pages 33-39 in B. Devall, ed. Clearcut: The Tragedy of Industrial Forestry. Sierra Club Books and Earth Island Press, San Francisco, CA.

Noss, R.F. 1993. Sustainable forestry or sustainable forests? Pages 17-43 in G.H. Aplet, N. Johnson, J.T. Olson, and V.A. Sample, eds. Defining Sustainable Forestry. The Wilderness Society and Island Press, Washington, DC.

Noss, R.F., and A. Cooperrider. 1994. Saving Nature's Legacy: Protecting and Restoring Biodiversity. Defenders of Wildlife and Island Press, Washington, DC.

Noss, R.F., and B. Csuti. 1994. Habitat fragmentation. Pages 237-264 in G.K. Meffe and R.C. Carroll, eds. Principles of Conservation Biology. Sinauer Associates, Sunderland, MA.

Noss, R.F. 1994. Creating regional reserve networks. Pages 289-290 in G.K. Meffe and R.C. Carroll, eds. Principles of Conservation Biology. Sinauer Associates, Sunderland, MA.

Noss, R.F. 1994. Hierarchical indicators for monitoring changes in biodiversity. Pages 79-80 in G.K. Meffe and R.C. Carroll, eds. Principles of Conservation Biology. Sinauer Associates, Sunderland, MA.

Murphy, D., D. Wilcove, R. Noss, J. Harte, C. Safina, J. Lubchenco, T. Root, V. Sher, L. Kaufman, M. Bean, and S. Pimm. 1994. On reauthorization of the Endangered Species Act. Conservation Biology 8: 1-3.

Atwood, J.L., and R.F. Noss. 1994. Gnatcatchers and natural community conservation planning: Have we really avoided a train wreck? Illahee: Journal of the Northwest Environment 10: 123-130.

Noss, R.F. 1994. Cows and conservation biology. Conservation Biology 8: 613-616.

Noss, R.F. 1994. Some principles of conservation biology, as they apply to environmental law. Chicago Kent Law Review 69: 893-909.

Noss, R.F. 1994. Biodiversity, wildness, and The Wildlands Project. Pages 34-42 in D.C. Burks, ed. Place of the Wild: A Wildlands Anthology. Island Press, Washington, DC.

Noss, R.F. 1994. El Proyecto de Tierras Silvestres: Estrategia para la conservacion de Áreas Naturales. Pages 323-365 in A. Vega, ed. Corredores Conservacionistas en la Región Centroamericana. Memorias de una Conferencia Regional auspiciada por el Proyecto Paseo Pantera. Heredia, Costa Rica, 17 al 20 de Septiembre de 1993. Tropical Research and Development, Gainesville, FL.

O'Leary, J.F., S.A. DeSimone, D.D. Murphy, P.F. Brussard, M.S. Gilpin, and R.F. Noss. 1994. Bibliographies on coastal sage scrub and related malacophyllous shrublands of other Mediterranean-type climates. California Wildlife Conservation Bulletin No. 10. California Department of Fish and Game, Sacramento, CA.

Noss, R.F. 1994/95. Wilderness--Now more than ever (A response to Callicott). Wild Earth 4(4): 60-63.

Noss, R.F. 1995. Maintaining Ecological Integrity in Representative Reserve Networks. World Wildlife Fund Canada, Toronto, Ont.

Noss, R.F. 1995. Foreword. Pages xiii-xv in L. Hansson, L. Fahrig, and G. Merriam, eds. Mosaic Landscapes and Ecological Processes. IALE Studies in Landscape Ecology 2. Chapman and Hall, New York.

Noss, R.F. 1995. Foreword. Pages x - x in CREILG Special Project Team. Atlas of the Central Rockies Ecosystem: Toward an Ecologically Sustainable Landscape. Komex International, Ltd., Calgary, Alberta.

Noss, R.F., E.T. LaRoe, and J.M. Scott. 1995. Endangered Ecosystems of the United States: A Preliminary Assessment of Loss and Degradation. Biological Report 28. USDI National Biological Service, Washington, DC.

Noss, R.F., and D.D. Murphy. 1995. Species and habitat are inseparable. Conservation Biology 9: 229-231.

Noss, R.F. 1995. Biodiversity and Landscape Ecology: A Background Paper for Wetland Restoration Policy. Technical Report, College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR.

Noss, R.F. 1995. The perils of Pollyannas. Conservation Biology 9: 701-703.

Noss, R.F., and R.L. Peters. 1995. Endangered Ecosystems of the United States: A Status Report and Plan for Action. Defenders of Wildlife, Washington, DC.

Noss, R.F. 1995. Assessing rigor and objectivity in conservation science. Wildlife Society Bulletin 23:539-541.

Noss, R.F. 1995. Ecological integrity and sustainability: Buzzwords in conflict? Pages 60-76 in L. Westra and J. Lemons, eds. Perspectives on Ecosystem Integrity. Kluwer Academic Publications, Boston.

Kavanagh, K., R. Noss, and T. Iacobelli. 1995. Building the ark: the science behind the selection of protected areas. Pages 2-8 in M. Hummel, ed. Protecting Canada's Endangered Spaces: An Owner's Manual. Ken Porter Books, Toronto.

Noss, R.F. 1995/96. Science grounding strategy: Conservation biology in wildlands work. Wild Earth 5(4): 17-19.

Noss, R.F. 1995/96. What should endangered ecosystems mean to The Wildlands Project? Wild Earth 5(4): 20-29.

Vance-Borland, K., R. Noss, J. Strittholt, P. Frost, C. Carroll, and R. Nawa. 1995/96. A biodiversity conservation plan for the Klamath/Siskiyou region: A progress report on a case study for bioregional conservation. Wild Earth 5(4): 52-59.

Noss, R.F. 1996. The naturalists are dying off. Conservation Biology 10:1-3.

Noss, R.F. 1996. Conservation of biodiversity at the landscape scale. Pages 574-589 in R.C. Szaro and D.W. Johnston, eds. Biodiversity in Managed Landscapes. Oxford University Press, New York.

Noss, R.F. 1996. Biodiversity, ecological integrity, and wilderness. International Journal of Wilderness 2(2):5-8.

Noss, R.F. 1996. Do Eastside forests need restoration or crown fires? Wild Earth 6(2):9-11.

Noss, R.F. 1996. Foreword. Pages xi - xii in D.A. Falk, C.I. Millar, and M. Olwell, eds. Restoring Diversity: Strategies for Reintroduction of Endangered Plants. Center for Plant Conservation and Island Press, Washington, DC.

Christensen, N.L., A.M. Bartuska, J.H. Brown, S. Carpenter, C. D'Antonio, R. Francis, J.F. Franklin, J.A. MacMahon, R.F. Noss, D.J. Parsons, C.H. Peterson, M.G. Turner, and R.G. Woodmansee. 1996. The report of the Ecological Society of America Committee on the Scientific Basis for Ecosystem Management. Ecological Applications 6: 665-691.

Noss, R.F. 1996. Ecosystems as conservation targets. Trends in Ecology and Evolution 11:351.

Noss, R.F. 1996. Conservation or convenience? Conservation Biology 10:921-922.

Noss, R.F., H.B. Quigley, M.G. Hornocker, T. Merrill, and P. Paquet. 1996. Conservation biology and carnivore conservation. Conservation Biology 10:949-963.

DellaSala, D., J.R. Strittholt, R.F. Noss, and D.M. Olson. 1996. A critical role for core reserves in managing Inland Northwest landscapes for natural resources and biodiversity. Wildlife Society Bulletin 24:209-221.

Kiester, A.R., J.M. Scott, B. Csuti, R. Noss, B. Butterfield, K. Sahr, and D. White. 1996. Conservation prioritization using GAP data. Conservation Biology 10:1332-1342.

Noss, R.F. 1996. Protected areas: How much is enough? Pages 91-120 in R.G. Wright, ed. National Parks and Protected Areas. Blackwell, Cambridge, MA.

Noss, R.F. 1996. On attacking a caricature of reserves: response to Everett and Lehmkuhl. Wildlife Society Bulletin 24:777-779.

Noss, R.F., and J.M. Scott. 1997. Ecosystem protection and restoration: The core of ecosystem management. Pages 239-264 in M.A. Boyce and A.W. Haney, eds. Ecosystem Management: Concepts and Methods. Yale University Press, New Haven, CT.

Noss, R.F., and B. Csuti. 1997. Habitat fragmentation. Pages 269-304 in G.K. Meffe and R.C. Carroll, eds. Principles of Conservation Biology. Second edition. Sinauer Associates, Sunderland, MA.

Noss, R.F. 1997. A Big-Picture Approach to Forest Certification: A Report for World Wildlife Fund's Forests for Life Campaign in North America. World Wildlife Fund, Washington, DC.

Noss, R.F., M.A. O'Connell, and D.D. Murphy. 1997. The Science of Conservation Planning: Habitat Conservation under the Endangered Species Act. World Wildlife Fund and Island Press, Washington, DC.

Noss, R.F. 1997. Conservation assessments: a synthesis. Pages 95-99 in T. Ricketts, E. Dinerstein, D.M. Olson, C. Loucks, P. Hedao, P. Hurley, R. Abell, S. Walters, and K. Carney. A Conservation Assessment of the Terrestrial Ecoregions of North America. World Wildlife Fund, Washington, DC.

Noss, R.F. 1997. Principles of conservation biology. Pages 16-30 in L. Jenkins and J. Peepre, eds. Towards a Yukon Protected Areas Strategy: Applying thr Principles of Conservation Biology. Proceedings of a Workshop on Conservation Biology, Whitehorse, Yukon, May, 1996. Canadian Parks and Wilderness Society, Whitehorse, Yukon.

Noss, R.F. 1997. Foreword. Pages iii-iv in T.N. Kaye, A. Liston, R.M. Love, D.L. Luoma, R.J. Meinke, and. M.V. Wilson, eds. Conservation and Management of Native Plants and Fungi: Proceedings of an Oregon Conference on the Conservation and Management of Native Vascular Plants, Bryophytes, and Fungi. Native Plant Society of Oregon, Corvallis, OR.

Noss, R.F. 1997. Reinterpreting sustainability. Review of Last Stand: Protected Areas and the Defense of Tropical Biodiversity, edited by R. Kramer, C. van Schaik, and J. Johnson. Trends in Ecology and Evolution 12:450-451.

Noss, R.F. 1997. The failure of universities to produce conservation biologists. Conservation Biology 11: 1267-1269.

Noss, R.F. 1997. The principles of conservation biology (in action). Pages 22-32 in S. Legault and K. Wiebe, eds. Connections: Proceedings of the First Conference on the Yellowstone to Yukon Conservation Initiative. Y2Y, Canmore, AB.

DellaSala, D.A., D.M. Olson, E. Dinerstein, W. Wettengel, R.F. Noss, and W.M. Eichbaum. 1997. Conservation status and importance of the Klamath-Siskiyou ecoregion. Pages 16-21 in J.K. Beigel, E.S. Jules, and B. Snitkin. 1997. Proceedings of the First Conference on Siskiyou Ecology. May 30-June 1, 1997. Siskiyou Regional Educational Project, Cave Junction, OR.

Vance-Borland, K., and R.F. Noss. 1997. An ecosystem classification and gap analysis of the Klamath-Siskiyou region. Pages 175-183 in J.K. Beigel, E.S. Jules, and B. Snitkin. 1997. Proceedings of the First Conference on Siskiyou Ecology. May 30-June 1, 1997. Siskiyou Regional Educational Project, Cave Junction, OR.

Noss, R.F. In press. Sustaining ecological integrity. Global Bioethics:

Noss, R.F. In press. At what scale should we manage biodiversity? In F. Bunnell, ed. Biodiversity in Forest Landscapes. University of British Columbia Press, Vancouver, BC.

Noss, R.F. In press. Assessing and monitoring forest biodiversity: a suggested framework and indicators. Forest Ecology and Management.

Noss, R.F. In press. Roadside ecosystems. In B.L. Harper-Lore, M. Wilson, and D. Jacobovitz, eds. Roadside use of native plants. U.S. Department of Transportation, Federal Highway Administration. Washington, DC.

Beier, P., and R.F. Noss. In press. Do habitat corridors provide connectivity? Conservation Biology.

Noss, R. E. Dinerstein, B. Gilbert, M.. Gilpin, B. Miller, J. Terborgh, and S. Trombulak. In press. Core areas. In M.E. Soulé and J. Terborgh (eds.). Continental Reserve Networks. Island Press, Washington, DC.

Noss, R.F. (ed.). In press. From the Redwood Forest: The Ecology and Conservation of Redwoods. Island Press, Washington, DC.

Noss, R. In press. Introduction. In R. Noss, ed. From the Redwood Forest: The Ecology and Conservation of Redwoods. Island Press, Washington, DC.

Cooperrider, A., C. Carroll, B. Marcot, K. Nelson, R. Noss, D. Olson, H. Welsh, and W. Zielinski. In press. Terrestrial fauna. In R. Noss, ed. From the Redwood Forest: The Ecology and Conservation of Redwoods. Island Press, Washington, DC.

Noss, R., M. Sorensen, and J. Strittholt. In press. Landscape planning and design. In R. Noss, ed. From the Redwood Forest: The Ecology and Conservation of Redwoods. Island Press, Washington, DC.

Thornburgh, D., F. Euphrat, D. Angelides, C. Olson, R. Noss, A. Cooperrider, and T. Roelofs. In press. Managing redwoods. In R. Noss, ed. From the Redwood Forest: The Ecology and Conservation of Redwoods. Island Press, Washington, DC.

Noss, R. In press. Conclusions. In R. Noss, ed. From the Redwood Forest: The Ecology and Conservation of Redwoods. Island Press, Washington, DC.

Main, M.B., F.M. Roka, and R.F. Noss. In review. Incentive-based conservation on private lands in southwest Florida. Conservation Biology.

Noss, R.F. In review. Aldo Leopold was a conservation biologist. Wildlife Society Bulletin.